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Mercuric Iodide Photocell Technology for Room Temperature Readout of Scintillators

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Mercuric iodide (HgI_2) is a well known material for the direct detection of gamma rays; however, the largest volume achievable is limited by thickness of the detector, which needs to be a small fraction of the average trapping length for electrons. We are reporting here preliminary results in using HgI_2 crystals to fabricate photocells used in the readout of various scintillators. The optical spectral response and efficiency of these photocells were measured and will be reported. Preliminary nuclear response from a HgI_2 photocell that was optically matched to a Ce^{3+}:$LaBr_3$ scintillator will also be presented and discussed. Further improvements will be sought by optimizing the transparent contact technology.

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